

NOTES ON THE TILLANDSIA.—These singular air plants, with two exceptions, I believe, are confined to the State of Florida. The Long Moss extends its range, and is met in all humid situations through the Southern coast states. Bartram's plant is credited by its author as growing in Southern Georgia. It was my good fortune to meet all the species in the growing state within the short period of three months, and, therefore, enjoyed the opportunity for their study. These plants are firmly attached to the limbs or trunks of trees by strong fibrous roots. They adhere, especially the larger ones, with such tenacity that it often requires some effort to effect their separation. Singularly strange, they seem to have a predilection to the Live Oak and Cypress. The *T. recurvata*, Pursh., was found growing upon old fences around Gainesville, but, with this exception, I do not recollect having seen any on other than their two favorite trees. The Cypress usually grows in low, wet situations, in circumscribed areas through the extensive pine forests, and the Live Oak selects, likewise, damp situations, preferably rich hummock soil. But these trees completely monopolize the ground on which they grow, and are constantly surrounded by an atmosphere which is peculiarly humid; also, their foliage intercepts well the piercing rays of the hot sun, conditions essentially requisite to the growth of *Tillandsia*. It is therefore presumable that these air plants seek these trees more on account of the shade and damp atmosphere than any inherent property in the bark which would favor their germination and attachment. Exposed to the hot sun and drier atmosphere, they soon lose their healthy appearance, and become stunted in their growth. This change I have frequently noticed in specimens which had been removed to shade trees around dwellings. All are vernal species except the Long Moss, which flowers during the summer.

T. utriculata, Leconte, occurs abundantly on the upper St. Johns River and the Keys south of Manatee. It is usually two to four feet high, yet it grows taller. My French guide carried a stalk from a rich hummock to his palmetto cabin which measured about seven feet. The stems of the larger plants branch considerably, while the smaller ones do so but sparingly. The flowers are white, and not blue, as in the next five species.

T. bracteata, Chapman, the most handsome of all the Tillandsias, with its large, bright and scarlet bracts, attracts one's attention from quite a distance. It is beautiful, and would be really an acceptable acquisition to our collection of exotics. This species is not common. I met it in about 28° lat., at Lake Monroe, Tampa, and Keys further South.

T. bulbosa, Hook, resembles smaller growths of the next species, but the blue-green color of the plant, the spreading and recurving of the leaves, and the ovoid bulb formed by the dilated leaves at the base, are at once good characters for discrimination. It appeared rare and was sparingly in Hillsboro and Manatee counties.

T. juncea, Leconte, grows abundantly in the hummocks along the upper St. Johns River. It seems very prolific, as every Live Oak and Cypress is full of it in its circumscribed localities.

T. Bartramii, Ell, on account of its green leaves, appears not unlike tufts of green grass growing on the limbs of trees. It is the only species which does not have the scurf on the leaves. It occurs sparingly on the Keys south of Sarasota, the only locality observed. At Palatka grows *T. cuspidata*, Leconte, and forms large reddish clusters on the trunks and larger limbs of trees. I observed it frequently along the St. Johns River as far south as Lake George. The isolated clusters of a reddish appearance are characteristic of this species, and enable one to separate it readily in its general appearance from *T. juncea*, Leconte, which it somewhat resembles. *T. recurvata*, Pursh, in a bunch might be mistaken for the Long Moss, but the single plants are characteristic in their upright stems and recurved leaves. This is the smallest species, and was detected growing on old fences and the Live Oak at Gainesville, the only locality observed.

T. usneoides, L., the last and perhaps the most generally admired by all observers. Its beautiful festoons and pendulous bunches of gray foliage, suspended from the wide-

spreading branches of the Live Oak, give it a novel and grotesque appearance to the Northern traveler, and all admire it, and cull tufts as mementos of the sunny South. It is much used in decorating halls, dining and sitting rooms. It contributes, also, as an article of commerce in the manufactured state. It is shipped in bales to Northern upholsterers, who use it as a good substitute for hair. In preparing for market, the dead moss only is used. The colored people convey it in bundles their usual way, or on carts, to the gin, where they dispose of it for a small consideration. Thus received, it is placed in water until it is thoroughly saturated, after which it is thrown on large stacks, and is allowed to pass through a process of sweating. It is then separated, dried and ginned. In the process of ginning, the strong woody fibre in the stem becomes denuded of its leafy and bark-like covering. It is this fibre which constitutes the article of commerce. It is a glossy brown color, and quite strong. Some, by special desire of purchasers, is dyed black, so as to more nearly resemble hair. A superior article is that which has further been subjected to a process of picking, by which all foreign matter is eliminated.—DR. A. P. GARBER, *Columbia, Penn.*

SOME FORKING SPIKES.—I was much interested in the remarks on *Plantago* in your September issue. The *Plantago major*, with branching leafy spikes, has occurred here for several years. It first attracted my attention in 1862; then for several seasons I did not collect a specimen. For the past year or two it has been increasingly abundant, sometimes with every part of the plant covered with a dense pubescence, again, perfectly smooth and shining.

A few years ago I collected along the Schuylkill River, near Philadelphia, the *Botrychium Virginicum*, Swartz, with the fertile frond branched somewhat in a similar manner, two, three, or even four branches. On examining the plants to ascertain, if possible, the cause, I found in every case that there had been an injury in the early stage of the plant, by which the fertile segment had been broken off, and from that point the branches started. Of course all of them were without the direct terminal spikes, which is not the case in the *Plantago*. Several other species of ferns are found here with occasionally forking or branching fronds.

A short time ago I collected the *Setaria glauca*, Beauv., with forked spike, but in no other way differing from the ordinary form of the species.—ISAAC C. MARTINDALE, *Camden, N. J.*

PROCEEDINGS OF THE DAVENPORT ACADEMY OF NATURAL SCIENCES, VOL. I, 1867-1876.—This is a thick, well-printed pamphlet of 284 pages, containing 36 plates, principally lithographic, and ten pages devoted to their explanation. In the preface is given the origin and history of the Academy, and the circumstances under which this first volume of proceedings is issued. Organized on the 15th of December, 1867, it passed through several stages of advance and decline, but within the past two or three years it has begun to enjoy a very prosperous existence. In 1875 it was thought that sufficient material had been collected to warrant the Academy in commencing the publication of its proceedings, and the present volume is the result. It is the intention, if possible to issue an additional number of proceedings as often as once a year. The price of the volume is \$2.50.

CALANDRINIA LEANA, Porter.—Dr. Gray reports this species, described in the October BULLETIN, as discovered also, later in the month of August, in Siskiyou county, California, by the Rev. E. L. Greene.

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